

Work Order ID 154281-1

Wednesday, December 07, 2016 1:49:59 PM

154281

Ship Jan 18, 2017

Page 1

Item ID: 644.4110

Accept

N900040100

Setup Start

NS1

Revision ID:

Stop

NS2

Item Name: Bracket (Large) Aft

Start Date: 12/23/2016 Start Qty: 7.00

7

Cust Item ID:

Required Date: 12/23/2016 Req'd Qty: 7.00

7

Customer:

Reference:

Approvals: Process Plan:

DAS
21
9-89

Date: DEC 07 2016

Tooling:

Date:

Run Start

NR1

QC:

Date:

SPC (Y/N):

Date:

Stop

NR2

Sequence ID/
Work Center ID

Operation
Description

Set Up/
Run Hours

Tool ID

Tool #

Plan
Code

Accept
Qty

Reject
Qty

Reject
Number

Insp.
Stamp

Draw Nbr

Revision Nbr

644.4100

F2

0.01

100

FLOW WATER JET

0.02

Waterjet

Memo

FLOW CNC Waterjet

1-Cut as per Dwg D

Dwg Rev: F2

Prog Rev: F2

2-Deburr if necessary

0.00

110

QC2- Inspect parts off machine FAI/FAIB

0.01

110

QC

Memo

Quality Control

7/10/11

on 11/12/09

7/10/11

on 11/12/09

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☒

Work Order: _____ Part No. _____ NCR No. _____	DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐	AGAINST DEPARTMENT/PROCESS <table style="width:100%; border: none;"> <tr> <td style="border: none;">Skid-tube ☐</td> <td style="border: none;">Cross tube ☐</td> <td style="border: none;">Water Jet ☐</td> <td style="border: none;">Engineering ☐</td> </tr> <tr> <td style="border: none;">Machining ☐</td> <td style="border: none;">Small Fab ☐</td> <td style="border: none;">Prod. Eng. Coord. ☐</td> <td style="border: none;">Quality ☐</td> </tr> <tr> <td style="border: none;">Thermoforming ☐</td> <td style="border: none;">Finishing ☐</td> <td style="border: none;">Rec/Store/Packaging ☐</td> <td style="border: none;">Other ☐</td> </tr> <tr> <td style="border: none;">Large Fab ☐</td> <td style="border: none;">Composite ☐</td> <td style="border: none;">Supplier ☐</td> <td></td> </tr> </table>				Skid-tube ☐	Cross tube ☐	Water Jet ☐	Engineering ☐	Machining ☐	Small Fab ☐	Prod. Eng. Coord. ☐	Quality ☐	Thermoforming ☐	Finishing ☐	Rec/Store/Packaging ☐	Other ☐	Large Fab ☐	Composite ☐	Supplier ☐	
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Date :	Step #:	QTY Effective :		MRB (QSI042) Approval 9-89 17-01-04																	
Description Work Order Deviation		Disposition																			
QC took one for QC template																					
		Completed By Lead hand / Supervisor Approval Verification QC / QA Coordinator Approval																			
Root Cause		FAULT CATEGORY																			
Environment ☐ Design ☐ Doc/Data ☐ Equip/Tooling ☐ Handling/Pre ☐ Material ☐ Internal Transport ☐ Tribal Knowledge ☐ LOA ☐ Substation ☐ Past Expiry Date ☐ Misidentified ☐	No Re-verification ☐ Operator ☐ Offset/Setup ☐ Supplier ☐ Training ☐ Use for Testing ☐ Poor Information ☐ Rushing ☐ Product Improvement ☐ Process Improvement ☐ Manufacturing Process ☐ Past Due ☐	Pressure/Forced ☐ Bending ☐ Centre Not Concentric ☐ Cracks ☐ Crimp/Kink/Ripple/Wave ☐ Cuffs ☐ Crushing ☐ Heat Treat ☐ Wave/Twist in Tube ☐ Marks/Chatter ☐	Temperature/Cure ☐ Set-up ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Inspection Incomplete/Unqualified ☐ Contamination ☐ Countersink ☐ Cut Too Short ☐ Instructions Incomplete/Unclear ☐ Drill Holes ☐		Power Loss/Surge ☐ Folio/Program ☐ Grain ☐ Weld ☐ Wrong Stock Pulled ☐ Out of Sequence ☐ Off-set ☐ Misabeled ☐ Fit/Function ☐ Misaligned/off center ☐	Positioned Wrong ☐ Outside Dimensions ☐ Over/Under tolerance ☐ Part Incorrect ☐ Part Lost/Missing ☐ Part Moved ☐ Drawing ☐ Finish ☐ Misread ☐ Turning Sequence ☐															
		OTHER : _____																			

Work Order ID 154281

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154281

Page 2

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N900040100

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Process Plan:

Date:

Tooling:

Date:

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NR2

QC:

Date:

SPC (Y/N):

Date:

Sequence ID/
Work Center ID

Operation
Description

Set Up/
Run Hours

Tool ID

Tool #

Plan
Code

Accept
Qty

Reject
Qty

Reject
Number

Insp.
Stamp

120

QC8- Inspect parts - second check

0.00

120

QC

Memo

0.02

Quality Control

(76) ①

DAS
38
9-89

DEC 12 2016

PTO
first page

130

Form as per dwg

0.03

130

Brake NC

NC BRAKE

Memo

0.02

Brake NC

DAS
30
9-89

7

JAN 09 2017

140

QC5- Inspect part completeness to step on W/O

0.00

140

QC

Memo

0.02

Quality Control

7

DAS
38
9-89
JAN 11 2017

DQA: _____ Date: _____

WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: <u>154281</u> Part No. <u>644-410</u> NCR No. _____		DISPOSITION Rework ☐ Scrap ☒ Use-as-is ☐ Suspected Unapproved ☐		AGAINST DEPARTMENT/PROCESS <table style="width:100%;"> <tr> <td>Skid-tube ☐</td> <td>Cross tube ☐</td> <td>Water Jet ☐</td> <td>Engineering ☐</td> </tr> <tr> <td>Machining ☐</td> <td>Small Fab ☒</td> <td>Prod. Eng. Coord. ☐</td> <td>Quality ☐</td> </tr> <tr> <td>Thermoforming ☐</td> <td>Finishing ☐</td> <td>Rec/Store/Packaging ☐</td> <td>Other ☐</td> </tr> <tr> <td>Large Fab ☐</td> <td>Composite ☐</td> <td>Supplier ☐</td> <td></td> </tr> </table>						Skid-tube ☐	Cross tube ☐	Water Jet ☐	Engineering ☐	Machining ☐	Small Fab ☒	Prod. Eng. Coord. ☐	Quality ☐	Thermoforming ☐	Finishing ☐	Rec/Store/Packaging ☐	Other ☐	Large Fab ☐	Composite ☐	Supplier ☐																																																	
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Work Order ID 154281

Wednesday, December 07, 2016 1:49:59 PM

154281

Page 3

Item ID: 644.4110

Accept

N900040100Setup Start ***NS1***

Revision ID:

Stop ***NS2***

Item Name: Bracket (Large) Aft

Start Date: 12/23/2016 Start Qty: 7.00

7

Cust Item ID:

Required Date: 12/23/2016 Req'd Qty: 7.00

7

Customer:

Reference:

Approvals: Process Plan:

Date:

Tooling:

Date:

Run Start ***NR1***

QC:

Date:

SPC (Y/N):

Date:

Stop ***NR2***Sequence ID/
Work Center IDOperation
DescriptionSet Up/
Run Hours

Tool ID

Tool #

Plan
CodeAccept
QtyReject
QtyReject
NumberInsp.
Stamp

150

Outsource process-Anodize per QSI017 4.1.10.1

0.00

150

Outsource4

Outsource process - Anodize

Memo

Issue P/O to ATG : 34919

84.00

I- Black Anodize as per Dwg. see note 4.

Certification of Conformity is required

7

JAN 12 2017

DAS
13
9-88

160

Receive & Inspect for Damage & Mat'l Certs

0.00

160

Packaging

Packaging

Memo

0.02

7x SP17-01-17

170

QC5- Inspect part completeness to step on W/O

0.00

170

QC

Quality Control

Memo

0.02

7DAS
38
9-88
JAN 11 2017

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____		DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐		AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coor. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐					
Date :		Step #:		QTY Effective :				MRB (QSI042) Approval 	
Description Work Order Deviation				Disposition					
								Completed By 	
								Lead hand / Supervisor Approval Verification 	
								QC / QA Coordinator Approval 	

Root Cause				FAULT CATEGORY							
Environment	☐	No Re-verification	☐	Pressure/Forced	☐	Temperature/Cure	☐	Power Loss/Surge	☐	Positioned Wrong	☐
Design	☐	Operator	☐	Bending	☐	Set-up	☐	Folio/Program	☐	Outside Dimensions	☐
Doc/Data	☐	Offset/Setup	☐	Centre Not Concentric	☐	BOM/Route	☐	Grain	☐	Over/Under tolerance	☐
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Past Expiry Date	☐	Manufacturing Process	☐	OTHER : _____							
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Page 4

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Run Start ***NR1***

Approvals:

Process Plan:

Date:

Tooling:

Date:

Stop ***NR2***

QC:

Date:

SPC (Y/N):

Date:

Sequence ID/
Work Center ID

Operation
Description

Set Up/
Run Hours

Tool ID

Tool #

Plan
Code

Accept
Qty

Reject
Qty

Reject
Number

Insp.
Stamp

180

Spray Painting per QSI005 4.2

0.00

180

SprayPaint

Memo

0.02

1- PRIME AS PER DWG SEE NOTE 4 AND MPP-172

BATCH: 136429

2- PAINT AS PER DWG, SEE NOTE 4 AND MPP-172

BATCH: 136434

190

QC14- Inspect Spray Paint

0.00

190

QC

Memo

0.23

Quality Control

200

Identify as per dwg & Stock Location: CCF 132

0.00

200

Packaging

Memo

0.02

Packaging

7

17-02-01

P.T.O.

7

DAS
FEB 02 2017
3-89

P.T.O.

DAS
6
9-89

FEB 01 2017

DQA: aut Date: 2017-02-16



QA Closed: [Signature] Date: FEB - 7 2017 **WORK ORDER NON-CONFORMANCE / UPDATE**

Work Order update only ☐

Work Order: <u>154281</u> Part No. <u>644.4110</u> NCR No. <u>17-1268</u>	DISPOSITION Rework ☒ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐	AGAINST DEPARTMENT/PROCESS <table style="width:100%;"> <tr> <td>Skid-tube ☐</td> <td>Cross tube ☒</td> <td>Water Jet ☐</td> <td>Engineering ☐</td> </tr> <tr> <td>Machining ☐</td> <td>Small Fab ☐</td> <td>Prod. Eng. Coord. ☐</td> <td>Quality ☐</td> </tr> <tr> <td>Thermoforming ☐</td> <td>Finishing ☐</td> <td>Rec/Store/Packaging ☐</td> <td>Other ☐</td> </tr> <tr> <td>Large Fab ☐</td> <td>Composite ☐</td> <td>Supplier ☐</td> <td></td> </tr> </table>				Skid-tube ☐	Cross tube ☒	Water Jet ☐	Engineering ☐	Machining ☐	Small Fab ☐	Prod. Eng. Coord. ☐	Quality ☐	Thermoforming ☐	Finishing ☐	Rec/Store/Packaging ☐	Other ☐	Large Fab ☐	Composite ☐	Supplier ☐	
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Large Fab ☐	Composite ☐	Supplier ☐																			
Date: <u>17.01.30</u>		Step #: <u>180</u>		QTY Effective: <u>(7)</u>		MRB (QSI042) Approval <u>DAS 38 9-89</u> <u>17-01-30</u> <u>DAS 9</u>															
Description Work Order Deviation				Disposition																	
<u>excessive runs found in paint</u> <u>R.C. process</u> <u>P.T.O.</u>				<u>- Strip paint</u> <u>- Re paint</u> <u>*make sure anodize is not damage before paint*</u>																	
				Completed By <u>At 17-2-2</u>																	
				Lead hand / Supervisor Approval Verification <u>DAS 38 9-89</u> <u>FEB 02 2017</u>																	
				QC / QA Coordinator Approval <u>DAS 38 9-89</u> <u>FEB 02 2017</u>																	
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Reference:

Approvals: Process Plan: _____ Date: _____

Tooling: _____ Date: _____

Run Start ***NR1***

QC: _____ Date: _____

SPC (Y/N): _____ Date: _____

Stop ***NR2***Sequence ID/
Work Center IDOperation
DescriptionSet Up/
Run Hours

Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
---------	--------	-----------	------------	------------	---------------	-------------

210

QC21- Final Inspection - Work Order Release

0.00

210

QC

Memo

0.12

Quality Control

FEB 02 2017

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____	DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐	AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐					
Date : _____		Step #: _____		QTY Effective : _____		MRB (QSI042) Approval	
Description Work Order Deviation				Disposition			
				Completed By			
				Lead hand / Supervisor Approval Verification			
				QC / QA Coordinator Approval			
Root Cause		FAULT CATEGORY					
Environment ☐	No Re-verification ☐	Pressure/Forced ☐	Temperature/Cure ☐	Power Loss/Surge ☐	Positioned Wrong ☐		
Design ☐	Operator ☐	Bending ☐	Set-up ☐	Folio/Program ☐	Outside Dimensions ☐		
Doc/Data ☐	Offset/Setup ☐	Centre Not Concentric ☐	BOM/Route ☐	Grain ☐	Over/Under tolerance ☐		
Equip/Tooling ☐	Supplier ☐	Cracks ☐	Broken/Damage/Defect ☐	Weld ☐	Part Incorrect ☐		
Handling/Pre ☐	Training ☐	Crimp/Kink/Ripple/Wave ☐	Inspection Incomplete/Unqualified ☐	Wrong Stock Pulled ☐	Part Lost/Missing ☐		
Material ☐	Use for Testing ☐	Cuffs ☐	Contamination ☐	Out of Sequence ☐	Part Moved ☐		
Internal Transport ☐	Poor Information ☐	Crushing ☐	Countersink ☐	Off-set ☐	Drawing ☐		
Tribal Knowledge ☐	Rushing ☐	Heat Treat ☐	Cut Too Short ☐	Mislabeled ☐	Finish ☐		
LOA ☐	Product Improvement ☐	Wave/Twist in Tube ☐	Instructions Incomplete/Unclear ☐	Fit/Function ☐	Misread ☐		
Substation ☐	Process Improvement ☐	Marks/Chatter ☐	Drill Holes ☐	Misaligned/off center ☐	Turning Sequence ☐		
Past Expiry Date ☐	Manufacturing Process ☐	OTHER : _____					
Misidentified ☐	Past Due ☐						

Picklist Print

Wednesday, December 07, 2016 1:50:04 PM

Page 1

Work Order ID: 154281

154281

Parent Item: 6444110

644 4110

Parent Item Name: Bracket (Large) Aft

Start Date: 12/23/2016

Required Date: 12/23/2016

Start Qty: 7.00

Required Qty: 7.00

Comments: IPP REV:A 16.12.07 NEW ISSUE DD VERF:JLM

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
M2024T3S.125		Purchased	No				sf	8.7000		4.907368			

M2024T3S 125

2024-T3 .125 sheet

**

on 12/12/08

Location

Loc Qty

Loc Code

MAT021

8.7

M127668

8.7

M136430

5
8.1

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____	DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐	AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐			
Date :	Step #:	QTY Effective :		MRB (QSI042) Approval	
Description Work Order Deviation		Disposition			
				Completed By	
				Lead hand / Supervisor Approval Verification	
				QC / QA Coordinator Approval	
Root Cause Environment ☐ Design ☐ Doc/Data ☐ Equip/Tooling ☐ Handling/Pre ☐ Material ☐ Internal Transport ☐ Tribal Knowledge ☐ LOA ☐ Substation ☐ Past Expiry Date ☐ Misidentified ☐ No Re-verification ☐ Operator ☐ Offset/Setup ☐ Supplier ☐ Training ☐ Use for Testing ☐ Poor Information ☐ Rushing ☐ Product Improvement ☐ Process Improvement ☐ Manufacturing Process ☐ Past Due ☐		FAULT CATEGORY Pressure/Forced ☐ Bending ☐ Centre Not Concentric ☐ Cracks ☐ Crimp/Kink/Ripple/Wave ☐ Cuffs ☐ Crushing ☐ Heat Treat ☐ Wave/Twist in Tube ☐ Marks/Chatter ☐ Temperature/Cure ☐ Set-up ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Inspection Incomplete/Unqualified ☐ Contamination ☐ Countersink ☐ Cut Too Short ☐ Instructions Incomplete/Unclear ☐ Drill Holes ☐ Power Loss/Surge ☐ Folio/Program ☐ Grain ☐ Weld ☐ Wrong Stock Pulled ☐ Out of Sequence ☐ Off-set ☐ Mislabeled ☐ Fit/Function ☐ Misaligned/off center ☐ Positioned Wrong ☐ Outside Dimensions ☐ Over/Under tolerance ☐ Part Incorrect ☐ Part Lost/Missing ☐ Part Moved ☐ Drawing ☐ Finish ☐ Misread ☐ Turning Sequence ☐			
OTHER : ☐					

DQA: _____ Date: _____



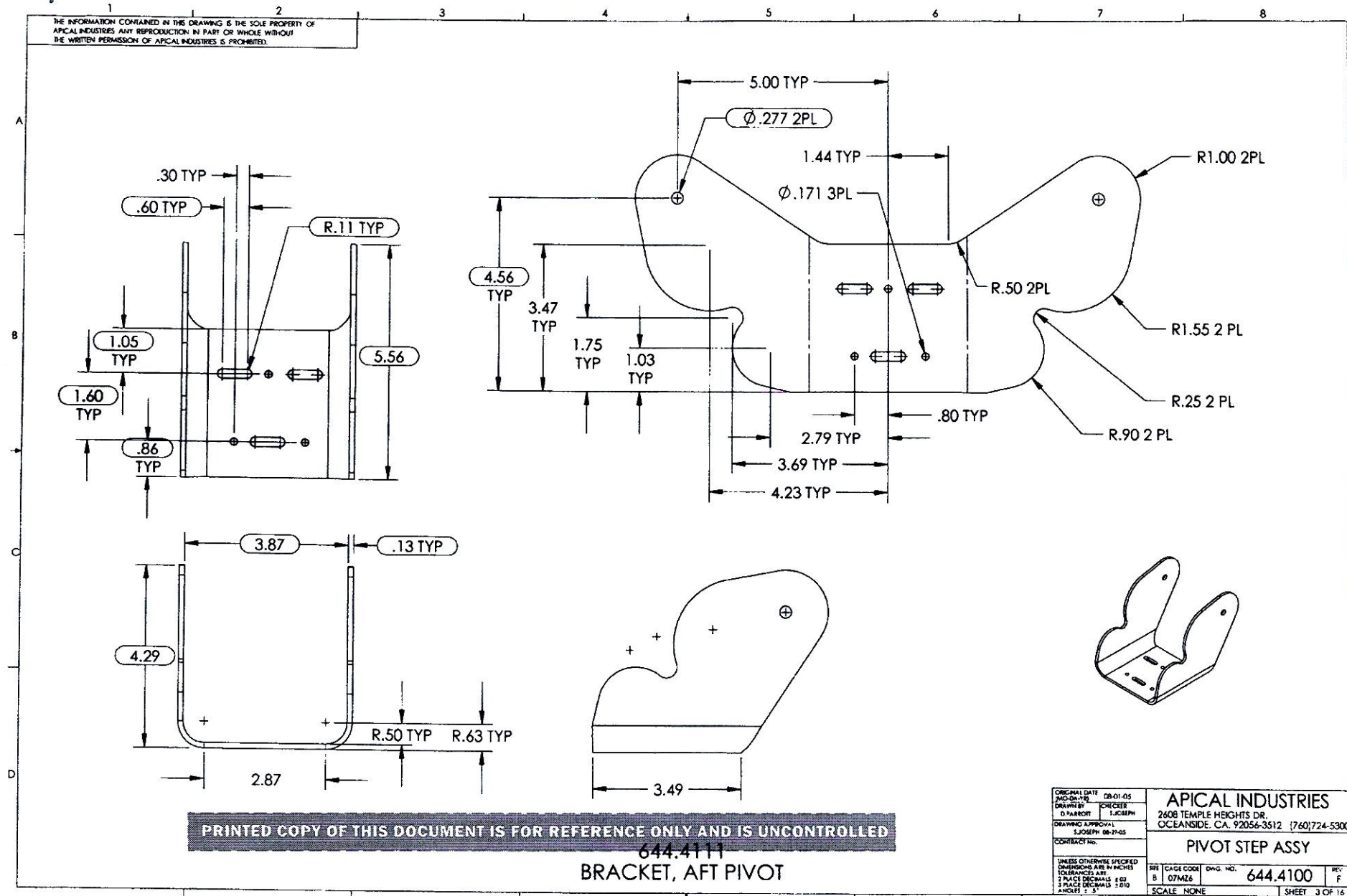
WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

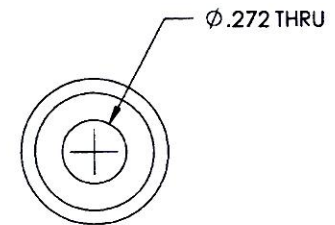
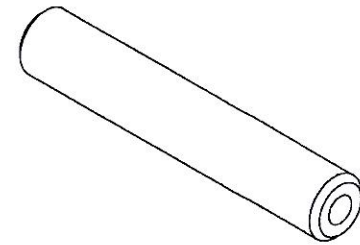
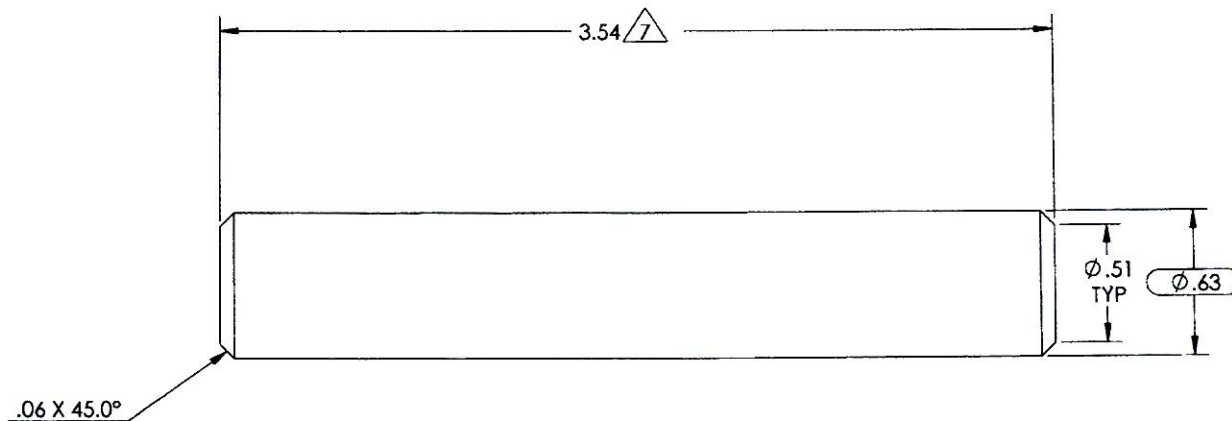
Work Order: _____ Part No. _____ NCR No. _____	DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐	AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐			
Date :	Step #:	QTY Effective :		MRB (QSI042) Approval	
Description Work Order Deviation		Disposition			
				Completed By	
				Lead hand / Supervisor Approval Verification	
				QC / QA Coordinator Approval	
Root Cause Environment ☐ Design ☐ Doc/Data ☐ Equip/Tooling ☐ Handling/Pre ☐ Material ☐ Internal Transport ☐ Tribal Knowledge ☐ LOA ☐ Substation ☐ Past Expiry Date ☐ Misidentified ☐ No Re-verification ☐ Operator ☐ Offset/Setup ☐ Supplier ☐ Training ☐ Use for Testing ☐ Poor Information ☐ Rushing ☐ Product Improvement ☐ Process Improvement ☐ Manufacturing Process ☐ Past Due ☐		FAULT CATEGORY Pressure/Forced ☐ Bending ☐ Centre Not Concentric ☐ Cracks ☐ Crimp/Kink/Ripple/Wave ☐ Cuffs ☐ Crushing ☐ Heat Treat ☐ Wave/Twist in Tube ☐ Marks/Chatter ☐ Temperature/Cure ☐ Set-up ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Inspection Incomplete/Unqualified ☐ Contamination ☐ Countersink ☐ Cut Too Short ☐ Instructions Incomplete/Unclear ☐ Drill Holes ☐ Power Loss/Surge ☐ Folio/Program ☐ Grain ☐ Weld ☐ Wrong Stock Pulled ☐ Out of Sequence ☐ Off-set ☐ Mislabeled ☐ Fit/Function ☐ Misaligned/off center ☐ Positioned Wrong ☐ Outside Dimensions ☐ Over/Under tolerance ☐ Part Incorrect ☐ Part Lost/Missing ☐ Part Moved ☐ Drawing ☐ Finish ☐ Misread ☐ Turning Sequence ☐			
OTHER : ☐					

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CONTRACT NO.		PIVOT STEP ASSY	
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE: 2 PLACE DECIMALS ± .02 3 PLACE DECIMALS ± .010 ANGLES ± .5°		SHEET: 3 OF 16	REV: F

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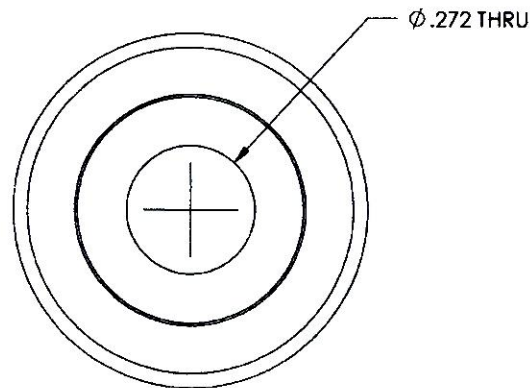
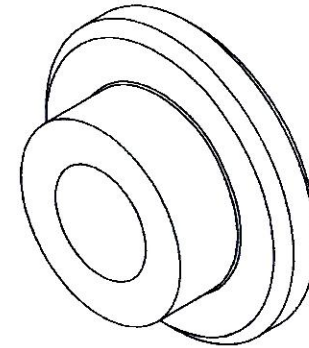
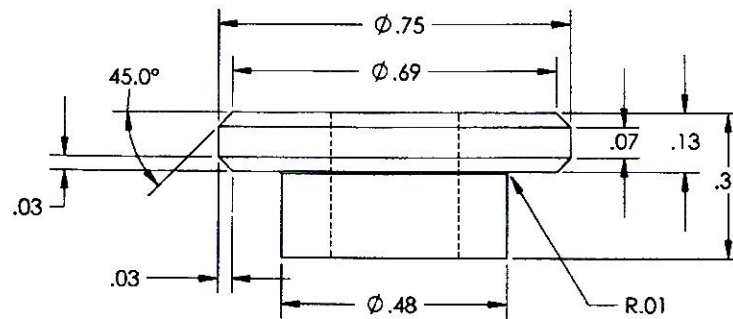


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ORIGINAL DATE 1980-01-01		08-01-03	
DRAWN BY SPAREBOT		CHECKER S. JOSEPH	
DRAWING APPROVAL S. JOSEPH 08-29-03		CONTRACT NO.	
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE: 2 PLACE DECIMALS ± .010 3 PLACE DECIMALS ± .005 ANGLES ± .5°			
APICAL INDUSTRIES 2608 TEMPLE HEIGHTS DR. OCEANSIDE, CA 92056-3512 (760)724-5300		PIVOT STEP ASSY REV. F	
SERIAL CAGE CODE B 07M26	DWG. NO. 644.4100	SCALE NONE SHEET 4 OF 16	

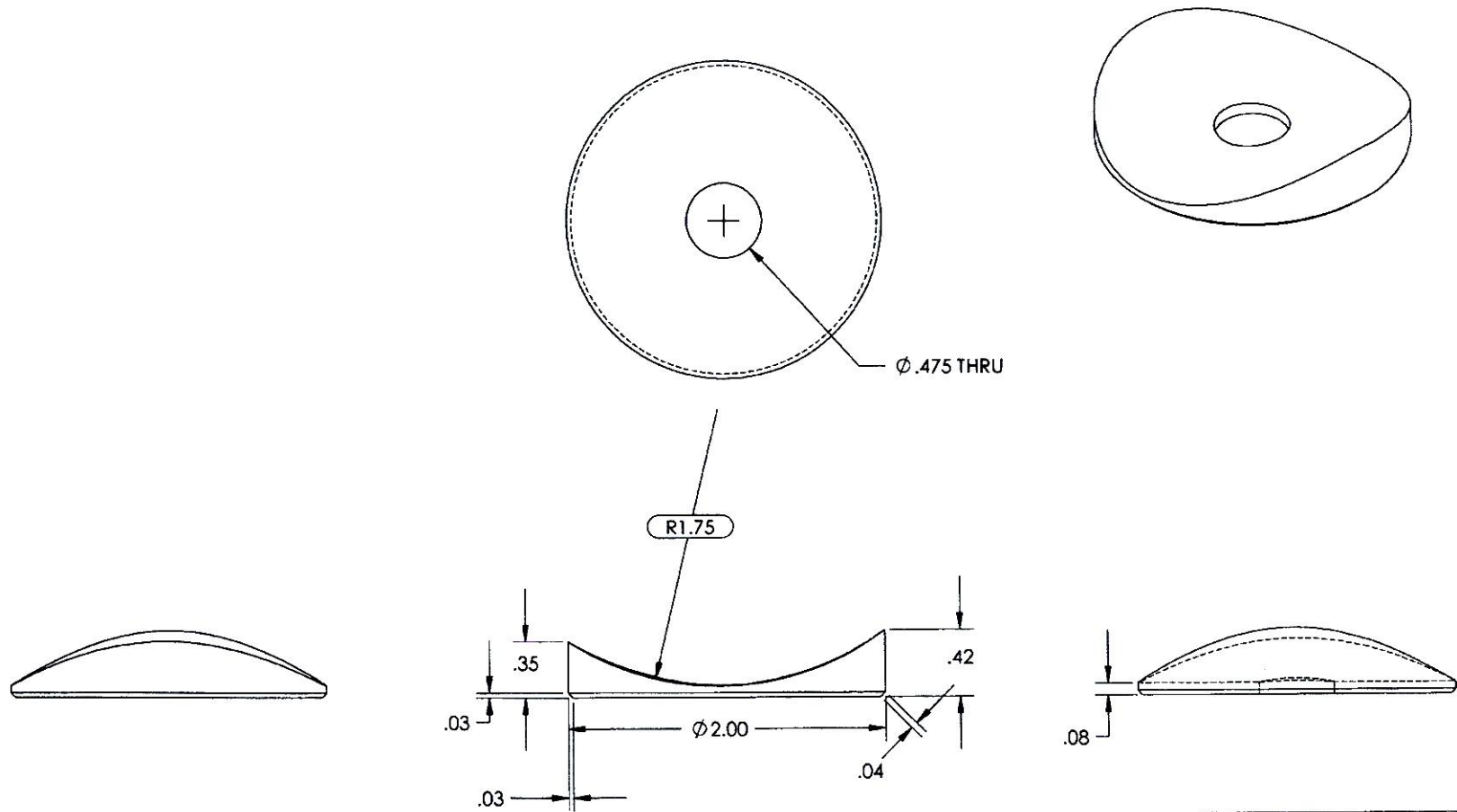
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CHECKED BY	S. JOSEPH	OCEANSIDE, CA. 92056-3512 (760)724-5300	
DRAWING APPROVAL	S. JOSEPH 08-21-05	PIVOT STEP ASSY	
CONTRACT NO.			
UNITS OTHERWISE SPECIFIED		REV.	F
DIMENSIONS ARE IN INCHES		SCALE	NONE
DECIMALS ARE:		SHEET	5 OF 16
2 PLACES DECIMALS 2.00			
3 PLACES DECIMALS 2.000			
ANGLES 2.5°			

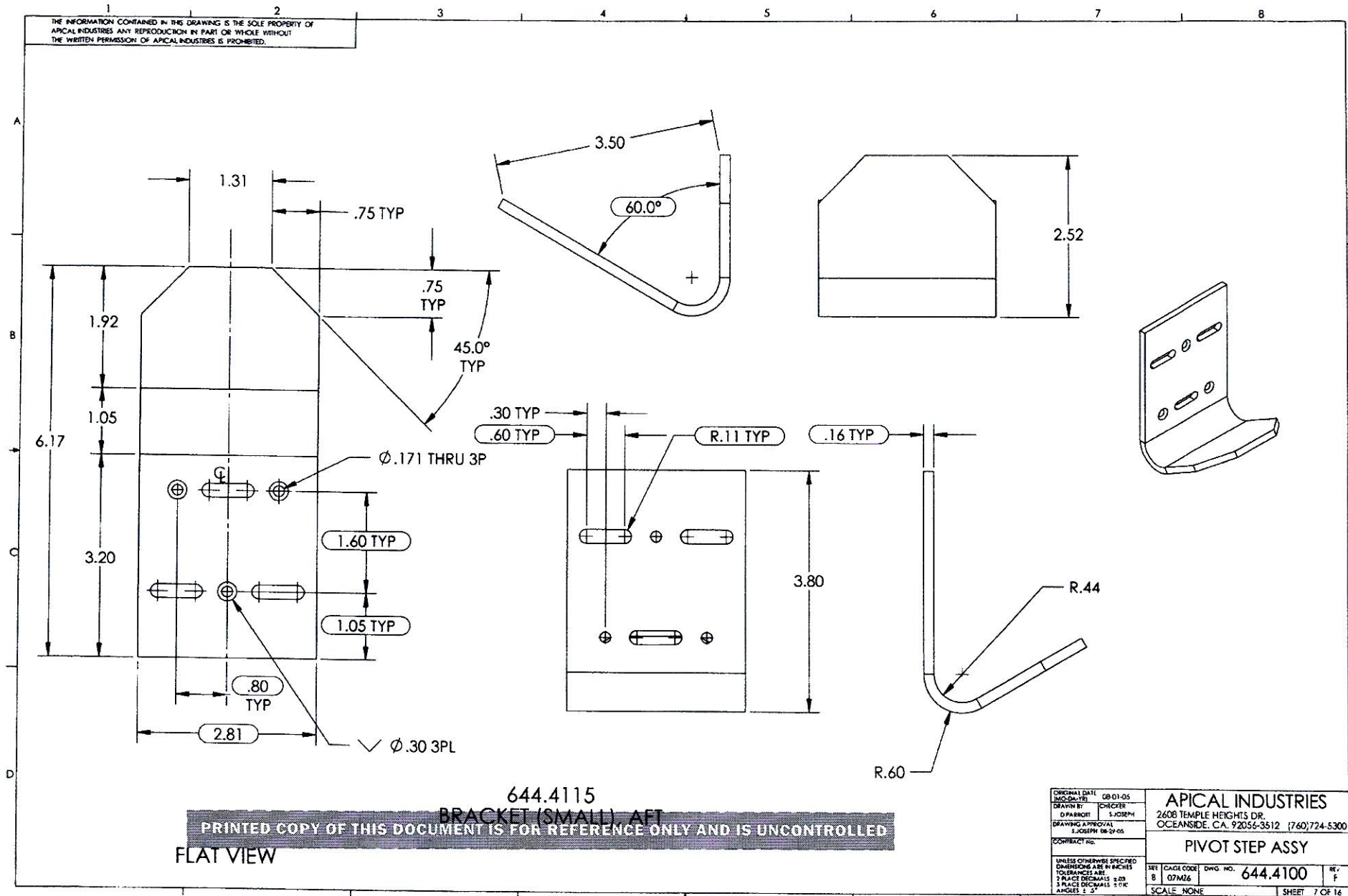
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DRAWING APPROVAL S. JOSEPH 08-29-05		PIVOT STEP ASSY	
CONTRACT NO.		SIZE B	SCALE NONE
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE: 2 PLACE DECIMALS .003 3 PLACE DECIMALS .002 ANGLES .5°		DWG. NO. 644.4100	REV. F
		SHEET 6 OF 16	

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DRAWN BY: CHIEFER		2608 TEMPLE HEIGHTS DR.	
D. FRANKIE		OCEANSIDE, CA. 92056-3512	
DRAWING APPROVAL: J. JOSEPH		(760) 724-5300	
CONTRACT NO.		PIVOT STEP ASSY	
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE: 2 PLACE DECIMALS ±.03 3 PLACE DECIMALS ±.01 ANGLES ±.5°		SHEET: 8	REV: F
CAGE CODE: 07M26		DWG. NO.: 644.4100	SCALE: NONE
		SHEET 7 OF 16	

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ORIGINAL DATE: 08-01-05
DRAWN BY: J. JOSEPH
CHECKED BY: J. JOSEPH
DRAWING APPROVAL: J. JOSEPH 08-29-05
CONTRACT NO.:
UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ARE:
1. PLACE DECIMALS 1.00
2. PLACE DECIMALS 1.00
3. PLACE DECIMALS 1.00
ANGLES 2°

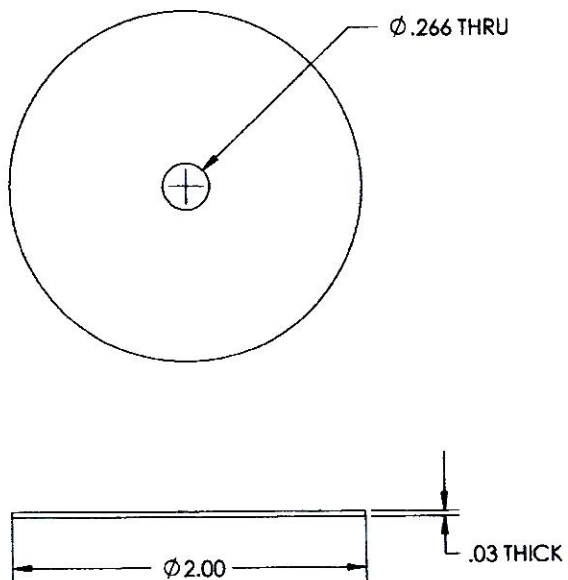
APICAL INDUSTRIES
2608 TEMPLE HEIGHTS DR.
OCEANSIDE, CA. 92056-3512 (760)724-5312
PIVOT STEP ASSY
SHEET 8 OF 8

BRACKET (SMALL), FWD

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ORIGINAL DATE (MM-DD-YY) 08-01-05	APICAL INDUSTRIES 2608 TEMPLE HEIGHTS DR. OCEANSIDE, CA. 92056-3512 (760)724-5300		
DRAWN BY S.JOSEPH	CHECKED S.JOSEPH		
DRAWING APPROVAL S.JOSEPH 08-24-05			
CONTRACT No.	PIVOT STEP ASSY		
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE: 1. 3 PLACE DECIMALS 1/10 2. 3 PLACE DECIMALS 1/20 3. 3 PLACE DECIMALS 1/40 ANGLES 1/2			
SIZE	CAGE CODE	QTY. NO.	REV.
B	07M26	644.4100	F
SCALE: NONE		SHEET 8 OF 16	

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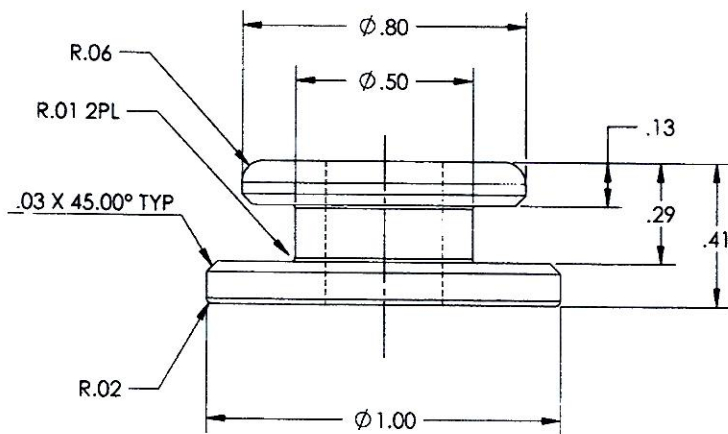
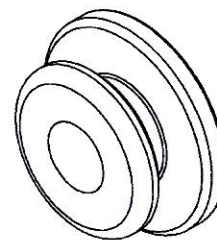
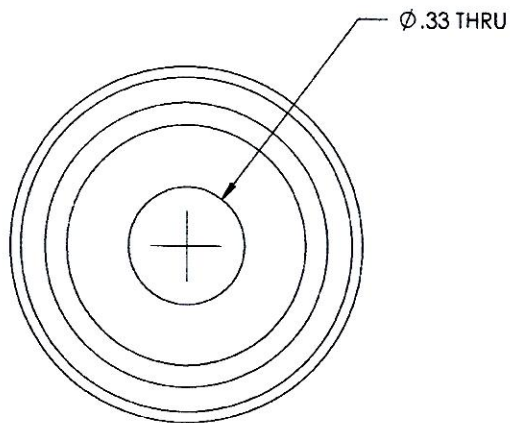


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ORIGINAL DATE 05-01-05		APICAL INDUSTRIES	
DRAWN BY J. JOSEPH		2608 TEMPLE HEIGHTS DR.	
CHECKED J. JOSEPH		OCEANSIDE, CA. 92056-3512 (760)724-5300	
DRAWING APPROVAL J. JOSEPH 05-24-05		PIVOT STEP ASSY	
CONTRACT NO.		REV B	QWG. NO. 644.4100
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE: 3 PLACE DECIMALS ±.003 2 PLACE DECIMALS ±.010 ANGLES ±.1°		SCALE NONE	SHEET 10 OF 16

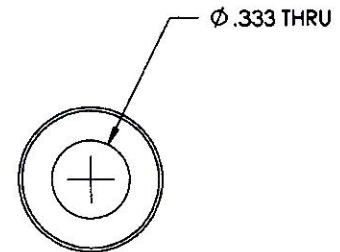
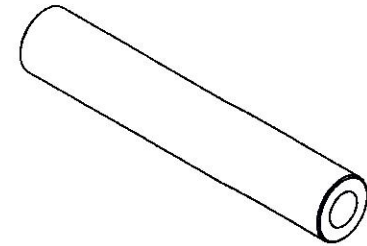
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ORIGINAL DATE 08-01-06		APICAL INDUSTRIES	
DRAWN BY	CHECKER		
DRAWN BY	CHECKER	2608 TEMPLE HEIGHTS DR.	
DRAWN BY	CHECKER	OCEANSIDE, CA. 92056-3512 (760)724-5300	
DRAWING APPROVAL		PIVOT STEP ASSY	
CONTRACT NO.		REV. F	
UNLESS OTHERWISE SPECIFIED		SIZE	SCALE NONE
DIMENSIONS ARE IN INCHES		CAGE CODE	DWG. NO. 644.4100
TOLERANCES ARE:		REV.	REV. F
2 PLACE DECIMALS ±.03		REV.	REV. F
3 PLACE DECIMALS ±.010		REV.	REV. F
ANGLES ±.5°		REV.	REV. F
		REV.	REV. F

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Ø .333 THRU

3.54 $\triangle 7$

Ø .59

Ø .62

.02 X 45.00°

644.4120
SPACER, CROSS-TUBE

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ORIGINAL DATE 08-01-05		APICAL INDUSTRIES	
DRAWN BY D. J. BROWN		2608 TEMPLE HEIGHTS DR. OCEANSIDE, CA 92056-3512 (760) 724-5300	
DRAWING APPROVED L. J. BROWN 08-29-05		PIVOT STEP ASSY	
CORRECTION NO.		REV. 1	
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE: 2 PLACE DECIMALS ± .00 3 PLACE DECIMALS ± .001 ANGLES ± .5°		REV. 1 CAGE CODE B 07M26	DWG. NO. 644.4100
SCALE: NONE		SHEET 12 OF 16	

1 2 3 4 5 6 7 8

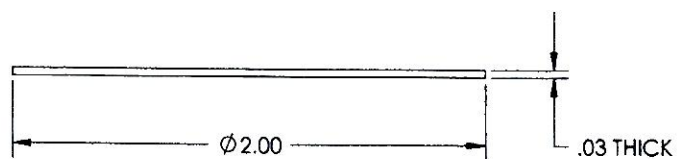
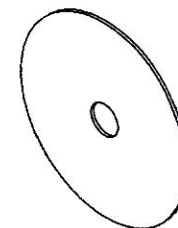
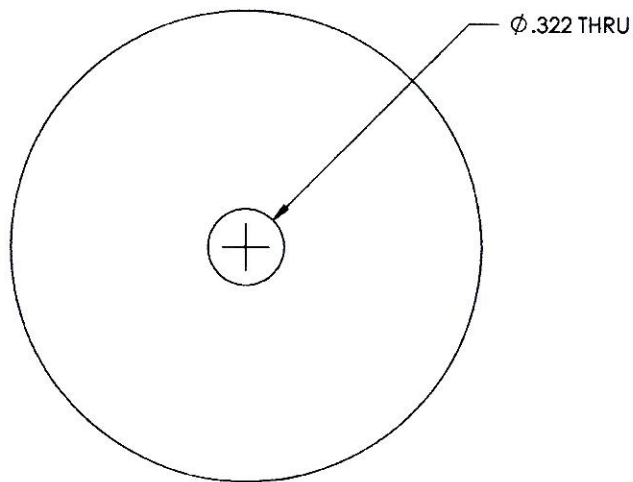
A

B

C

D

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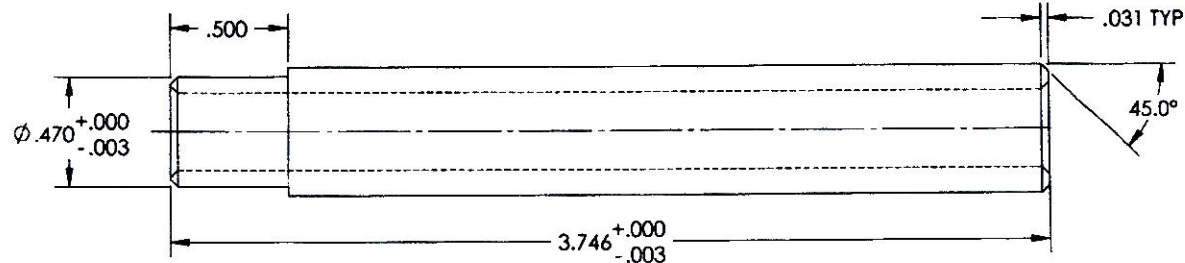
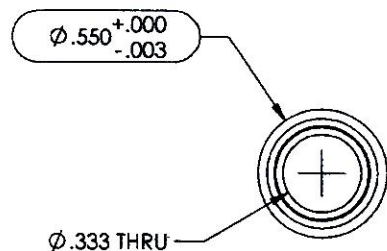


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ORIGINAL DATE 08-01-05		APICAL INDUSTRIES	
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DRAWING APPROVAL S. JOSEPH 08-29-05		PIVOT STEP ASSY	
CONTRACT NO.		REV. F	
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE: 2 PLACE DECIMALS ±.03 3 PLACE DECIMALS ±.010 ANGLES ±.5°		SHEET B	CAGE CODE 07M26
SCALE NONE		DWG. NO. 644.4100	SHEET 13 OF 16

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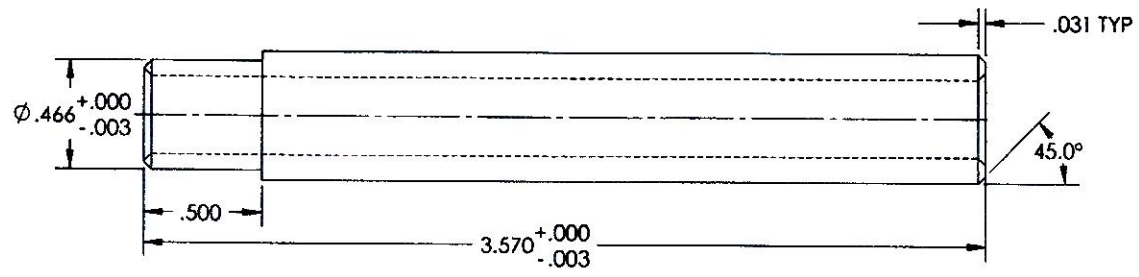
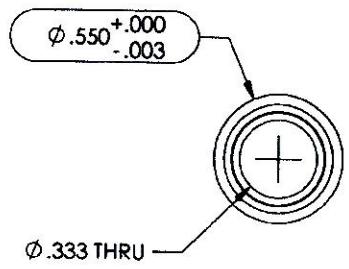


644.4122

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ORIGINAL DATE: 08-01-05		APICAL INDUSTRIES	
DRAWN BY: J. JOSEPH		2608 TEMPLE HEIGHTS DR.	
CHECKED BY: J. JOSEPH		OCEANSIDE, CA, 92056-3512 (760) 724-5300	
DRAWING APPROVAL: J. JOSEPH 08-29-05		PIVOT STEP ASSY	
CONFIRMATION:		REV. 1	
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE: 1 PLACE DECIMALS ±.02 2 PLACE DECIMALS ±.010 ANGLES ±.5°		SIZE: 07M16	DWG. NO. 644.4100
SCALE: NONE		SHEET 14 OF 16	

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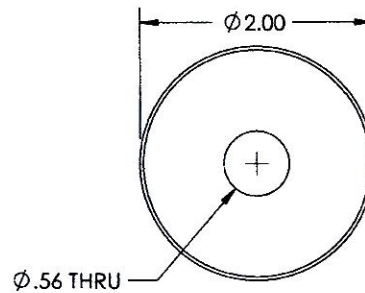
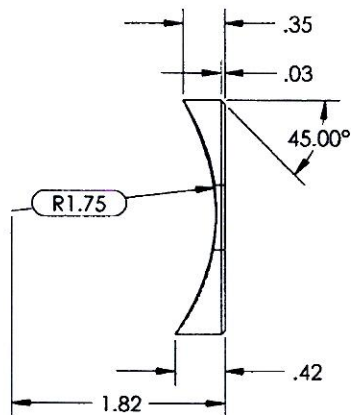


644.4123

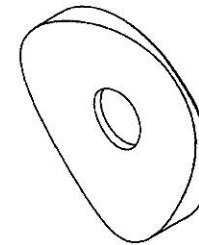
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ORIGINAL DATE 08-01-05		APICAL INDUSTRIES	
DRAWN BY D. RAINCOTT		2608 TEMPLE HEIGHTS DR. OCEANSIDE, CA. 92056-3512 (760)724-5300	
DRAWING APPROVAL J. JOSEPH 08-29-05		PIVOT STEP ASSY	
CONTRACT NO.		REV. B	REF. F
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE: 2 PLACE DECIMALS ±.02 3 PLACE DECIMALS ±.010 ANGLES ±.5°		SCALE: NONE	SHEET 15 OF 16

THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF APICAL INDUSTRIES. ANY REPRODUCTION IN PART OR WHOLE WITHOUT THE WRITTEN PERMISSION OF APICAL INDUSTRIES IS PROHIBITED.



644.4124



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ORIGINAL DATE 08-01-05		APICAL INDUSTRIES	
DRAWN BY J. JOSEPH		2608 TEMPLE HEIGHTS DR. OCEANSIDE, CA. 92056-3512 (760)724-5300	
CHECKED BY J. JOSEPH		PIVOT STEP ASSY	
DRAWING APPROVAL 1. JOSEPH 08-22-05		CONTRACT NO.	
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE: 3 PLACE DECIMALS ±.010 ANGLES ±.5°		SEE B 07M26	DWG NO. 644.4100
SCALE: NONE		REV. F	
SHEET 16 OF 16			

APICAL

INDUSTRIES, INC.

ENGINEERING CHANGE NOTICE NO. 04489

SHEET 1 OF 1

DWG NO. 644,4100

REV: F

PREPARED BY: J. BECKER

DATE: 04/08/14

EFFECT ON DWG
☐ INC. ☒ UNINC.

DWG TITLE: PIVOT STEP ASSY

APPROVED BY:

ENGR *[Signature]*

MFG

[Signature]

QC

[Signature]

EFF:

NEXT ORDER

TRANSACTION
A-ADD
R-REVISE

CODES (TC)
C-CREATE
D-DELETE

REASON: UPDATE NOTE 4, FINISH SPECIFICATION.

NOTES:

1. IDENTIFY ALL PARTS IN ACCORDANCE WITH MPP-120
2. MATERIAL: 2024-T3 ALUMINUM
3. MATERIAL: 6061-T6 ALUMINUM
4. FINISH IAW MPP-172 SECTION 2.1, SECTION 3.1, SECTION 4.1, SECTION 5.2.
5. MATERIAL: MDS-FILLED NYLON 6/6 SHEET, CUT OD CIRCLE USING 2" GASKET PUNCH, CUT ID HOLE USING 1/4" GASKET PUNCH
6. MATERIAL: MDS-FILLED NYLON 6/6 SHEET, CUT OD CIRCLE USING 2" GASKET PUNCH, CUT ID HOLE USING 5/16" GASKET PUNCH
7. DIMENSION VALUE HAS FINISH COATING OF 6-10 MIL (.006-.010) TAKEN INTO CONSIDERATION
8. ADD ADDITIONAL WASHER UNDERNEATH CASTLE NUTS IF NECESSARY.
9. FINISH: HARD ANODIZE IAW MIL-A-8625 TYPE III CLASS 2, COLOR BLACK.

SHOP COPY
RETURN TO
ENGINEERING
UNCONTROLLED COPY
SUBJECT TO AMENDMENT
WITHOUT NOTICE
WORK ORDER
NO. 154281 MJS
16-12-07

SHEET 1, NOTES IS:

DOCUMENTS EFFECTED:

☐ MDL ☐ INSTALL INSTRUC ☐ ICA ☐ BOM

CHANGE CATEGORY
☐ MAJOR ☒ MINOR

DER REVIEW REQUIRED
☐ YES ☒ NO

APICAL

INDUSTRIES, INC.

ENGINEERING CHANGE NOTICE NO.

04286

SHEET 1 OF 1

DWG NO. 644.4100

REV: F

PREPARED BY J. SOTO

DATE: 12/04/2013

EFFECT ON DWG
☐ INC. ☒ UNINC.

DWG TITLE: PIVOT STEP ASSY

APPROVED BY:

ENGR

[Signature]

MFG

[Signature]

QC

[Signature]

EFF.

NEXT ORDER

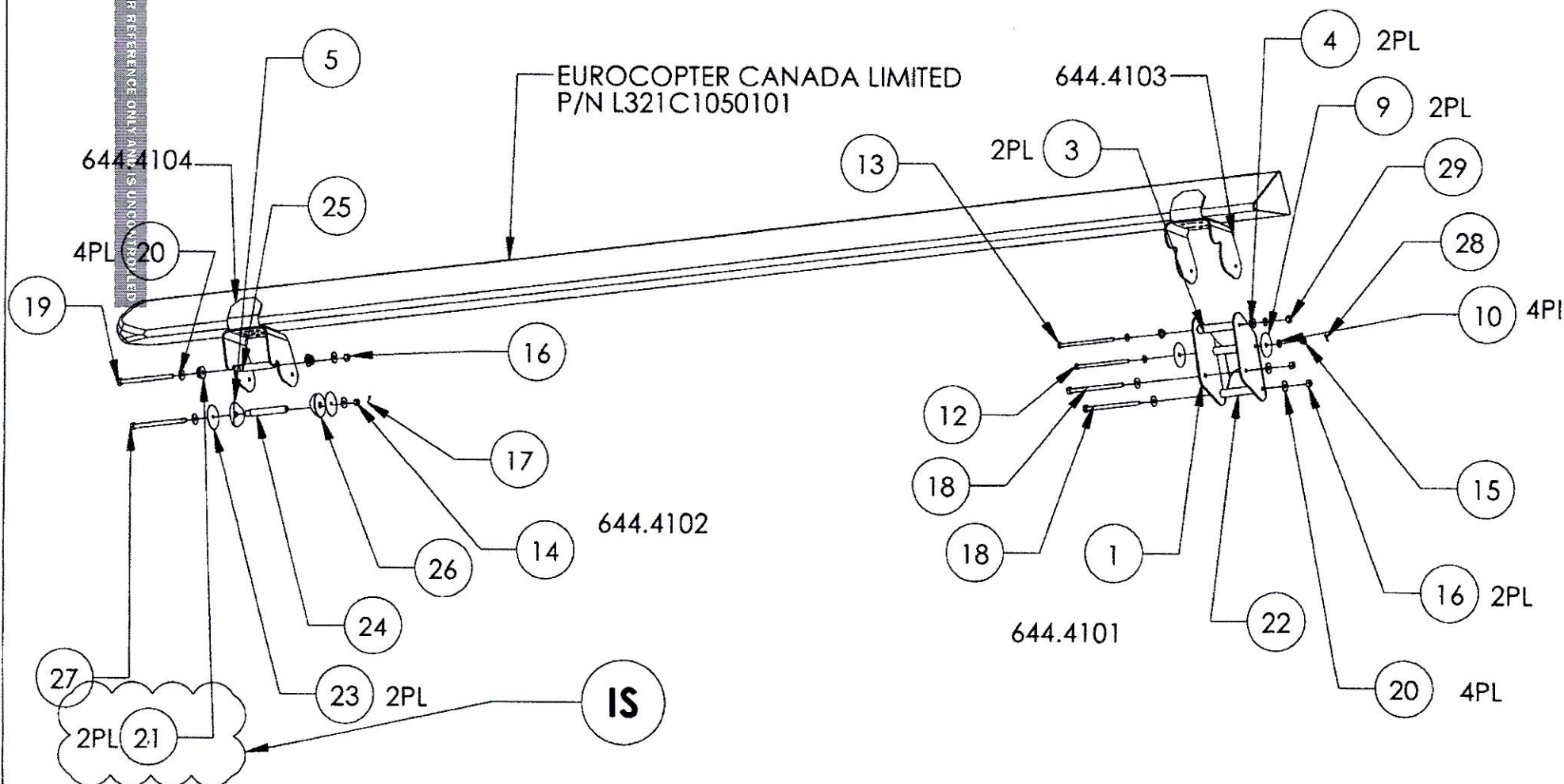
TRANSACTION CODES (TC):
A-ADD
R-REVISE
C-CREATE
D-DELETE

REASON: REVISED F/N CALL OUT FROM 22 TO 21

ECR:

13-151

SHEET 1, ZONE D1 IS:



DOCUMENTS EFFECTED:

☐ MDL ☐ INSTALL INSTRUCTIONS ☐ ICA ☐ FMS ☐ BOM

CHANGE CATEGORY

☐ MAJOR ☒ MINOR

DER REVIEW REQUIRED

☐ YES ☒ NO

QTY	OFFICIAL DATE 05-05-05		PARTS LIST	
NEXT ASSY [S]	BY DESIGNED BY	CHECKED BY	APICAL INDUSTRIES	
644.1800	D. PARBOTT	S. JOSEPH	2608 TEMPLE HEIGHTS DR. OCEANSIDE, CA. 92056-3512 (760) 724-5300	
	DRAWING APPROVAL S. JOSEPH 05-05-05		PIVOT STEP ASSY	
	CONTRACT NO.		SET	REV
	UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES		CAGE CODE	DWG. NO.
	TOLERANCES ARE:		079266	644.4100
	1. PLACE DECIMALS ± .03		SCALE: NONE	SHEET 1 OF 1
	2. PLACE DECIMALS ± .010			
	ANGLES ± 5			



Dart Aerospace Ltd.
1270 Aberdeen Street
Hawkesbury, ON K6A 1K7
Tel: 613 632 9577
Fax: 613 632 1053

PURCHASE ORDER

Purchase Order ID **PO34919**

Purchase Order Date 1/12/2017

PO Print Date 1/12/2017

Page Number 1 of 2

Order From :

A.T.G. INDUSTRIES INC.
731 INDUSTRIELLE ROAD
ROCKLAND, ON K4K 1T2
CANADA

VC-ATG001

Ship To : DART AEROSPACE LTD

1270 ABERDEEN
HAWKESBURY, ON K6A 1K7
CANADA



JAN 12 2017

Contact Name

Vendor Phone 613-446-4544

Ship To Contact

Ship To Phone

Ship Via: VENDOR'S TRUCK

Ship Acct:

Buyer

Chantal Lavoie

Customer POID

Customer Tax #

10127-2607

Terms

Net 30

Currency

CAD

FOB

FCA - (Free Carrier)

Line Nbr	Reference Vendor Part Number Line Comments Delivery Comments	Description/ Mfg ID	Req Date/ Taxable Promise Date	CD	Req Qty/ Unit of Measure	PO Unit Price	Extended Price
1	154347	644.4117 BRACKET REV. F	1/17/2017 Yes 1/17/2017 FINISH: HARD ANODIZE IAW MIL-A-8625 TYPE 3 CLASS 2, COLOR BLACK		7.00	\$7.05	\$49.35
Line Total:							\$49.35
2	154281	644.4110 BRACKET REV. F	1/17/2017 Yes 1/17/2017 FINISH: HARD ANODIZE IAW MIL-A-8625 TYPE 3 CLASS 2, COLOR BLACK		7.00	\$7.05	\$49.35
Line Total:							\$49.35
3	154348	644.4111 BRACKET REV. F	1/17/2017 Yes 1/17/2017 FINISH: HARD ANODIZE IAW MIL-A-8625 TYPE 3 CLASS 2, COLOR BLACK		7.00	\$7.05	\$49.35

PO Instructions: PRIMER IS SUPPLIED BY DART

Note:

1/12/2017



A.T.G. INDUSTRIES INC.
731 INDUSTRIELLE STREET
ROCKLAND, ON K4K 1T2
Canada

Ph: (613) 446-4544

Fax: (613) 446-4556

Pack List

Number: 912815

Date: 17-Jan-17

To

Dart Aerospace Ltd
1270 Aberdeen St
Hawkesbury, ON K6A 1K7

Ship To

CHANTAL LAVOIE
Dart Aerospace Ltd
1270 Aberdeen St
Hawkesbury, ON K6A 1K7

Ph: 613 632-9577

Fax: 613 632-1053

Ph: 613 632-9577

Fax: 613 632-1053

Terms		Ship Via	
Quantity	Description		
	PLEASE REFERENCE THE PACK LIST NUMBER ON ALL CORRESPONDENCE TO THIS SHIPMENT. IF YOU HAVE ANY QUESTIONS, PLEASE CALL AT (613) 446-4544.		
7 ea	Part: 644.4117 Bracket Job: 20580	PO: 34919	Rev: F Line: 1
7 ea	Part: 644.4110 Bracket Job: 20581	PO: 34919	Rev: F Line: 2
7 ea	Part: 644.4111 Bracket Job: 20582	PO: 34919	Rev: F Line: 3
1 ea	Part: ADMINISTRATION FEE ADMINISTRATION FEE Job: 20583	PO: 34919	Rev: N/A Line: 4
DATE: 17/01/2017			
CERTIFIED SIGNATURE:			
RECEIVER SIGNATURE: _____			
Note: This Packing Slip may contain parts that have been PLATED. Items that are plated may be subject to natural tarnishing and it is suggested that they be inspected within 24 hours of receipt.			
CERTIFICATE OF CONFORMANCE			
A.T.G. INDUSTRIES INC. CERTIFIES THAT ALL ITEMS IN THIS SHIPMENT CONFORM TO REQUIREMENTS.			
MADE IN CANADA.			



07 July 2014

Mr. Pat Smith
Director of Quality
DART Aerospace Hawkesbury
1270 Aberdeen St.
Hawkesbury, ON K6A 1K7

Mr. Smith:

The purpose of this letter is to provide no objection to an alternate means of finishing the metallic parts used as part of the Cable Cutters Kits designed under various STCs for the Airbus Helicopters AS350, EC135, EC145, Bell 206, 407, 212, 412 and AgustaWestland AW119 and AW139.

Many of the drawings currently call for a PRC-DESOTO PR-148 adhesion promoter prior to applying primer. Given the in-house testing conducted by DART Hawkesbury to determine the effectiveness of the adhesion promoter, we have no objection to removing the adhesion promoter from the finishing requirements listed on each drawing.

Feel free to reach out to me with any questions.

Regards,

A handwritten signature in dark ink, appearing to read "P Bravo", with a stylized flourish extending from the end.

Pablo Bravo
Director of Engineering
DART Aerospace Oceanside (Apical Industries, Inc.)
(760) 724-5300
pbravo@dartaero.com